

An Analysis of Remedial Education at Kentucky's Public Universities and Community Colleges

Kentucky Council on Postsecondary Education

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A significant number of students enter higher education without some of the basic skills necessary to perform college-level work. A recent nationwide survey conducted by the National Center for Education Statistics (NCES, 1996) revealed that 29 percent of first-time freshmen took at least one remedial course in fall 1995. In Kentucky, 44 percent of first-time freshmen enrolled in one or more remedial courses during the fall 1995 semester. This report provides the Council on Postsecondary Education (CPE) with a comprehensive look at the status of remedial education programs at Kentucky's public colleges and universities¹. This policy study also partially fulfills the mandates contained in House Joint Resolution (HJR) 6, which was passed by the General Assembly during the 1997 Extraordinary Session. HJR 6 directs the Council to "review the policies of higher education institutions for identification and placement of students in remedial and developmental courses and make a recommendation for establishing a statewide standard." This legislative mandate is consistent with the Council's statutory responsibilities. KRS 164.020 (8) authorizes the Council to establish "minimum qualifications for admission to the state postsecondary educational system."

The first section of the report briefly traces the historical development of this nation's remedial programs and presents opposing viewpoints on the appropriateness of offering remedial-level programs in college. The report then focuses on student placement policies and the administration of remedial programs in Kentucky. Next, the report features a demographic profile of remedial students and an evaluation of the effectiveness of remedial education. Following a discussion of the direct costs of remedial programs, policy issues related to remedial education are explored. The report concludes by taking a fresh look at the issue of access in postsecondary education.

Remedial Education: The National Perspective

The relatively large number of students who require some form of remediation has captured the attention of legislators, educators, and the media in recent years. History shows, however, that this is not a new phenomenon in higher education. An 1828 edition of the *Yale Report* featured an article criticizing the university's policy of admitting

¹ In 1996, the former Council on Higher Education directed staff to conduct a comprehensive study of remedial education at the state's public colleges and universities. Council staff had nearly completed this study when the General Assembly passed the Kentucky Postsecondary Education Improvement Act of 1997. This legislation provided the new Council with oversight of the state's postsecondary technical institutions. The postsecondary technical institutions offer some remedial courses; however, the Technical Institutions' Branch does not maintain centralized information on various remedial education statistics. Collecting and reporting remedial program data from the 25 postsecondary technical institutions is beyond the scope of the present study. In the future, staff will take a closer look at the remedial offerings at the postsecondary technical institutions.

students with “defective preparation.” Faculty at Harvard University developed special composition courses in 1874 to address freshmen deficiencies in writing. By the beginning of the twentieth century, eight out of ten colleges and universities in America had established preparatory schools for students lacking critical skills.

During this century, the expansion of remedial education programs paralleled the establishment of the community college movement. The growth in remedial programs continued during the 1950s when the launching of the Sputnik satellite prompted concern about the readiness of students. In the 1970s, remedial programs became even more pervasive as many colleges developed open admission standards in response to the changing demographics of entering freshmen and declining high school achievement levels (NCES, 1991). Currently, all public two-year institutions and eight out of ten public four-year institutions across the country offer at least one remedial course (NCES, 1996).

Many educators and policy makers believe that providing under-prepared students with access to college plays a critical role in protecting our social and economic vitality. Today’s global economy places a premium on highly skilled workers. Thus, in response to the demands of a changing economy, many workers have learned that they must periodically upgrade their skills to perform their jobs effectively. In addition, a significant number of adults have discovered--either by choice or by circumstance--that it is now the norm to change careers several times during one’s work life. Consequently, some form of postsecondary education has become imperative for all adults. Postsecondary education offers hope to many citizens that they will not be disenfranchised from the rewards of American life. In its historic report, *A Nation at Risk* (1983), the National Commission on Excellence in Education clearly articulated these sentiments: “The twin goals of equity and high-quality schooling have profound and practical meaning for our economy and society, and we cannot permit one to yield to the other in principle or in practice.” From a policy perspective, however, the simultaneous pursuit of these dual objectives has often proved to be a difficult undertaking.

Alexander Astin (1985) asserts that the pursuit of excellence and equity are compatible goals, if we agree that the purpose of education is the development of talent. Astin argues that the education of well-prepared students is no more important than the education of students who perform poorly on admissions tests. America can simply not afford to neglect the educational development of its under-prepared students. The belief that excellence and equity conflict with one another is predicated upon the erroneous assumption that education excellence is reflected in either an institution’s reputation or its resources. Instead, Astin asserts that excellence is a function of how well the institution develops the talents of its students and faculty.

Some educators, however, believe that the relaxing of academic admissions standards and the accompanying increase in remedial offerings at the college level may have produced some unintended consequences. Bruno Manno (1995) contends that admitting students who are under-prepared to do college-level work not only increases the costs of higher education but also devalues the worth of a college degree. He notes that remedial education contributes to the increased time it takes many students to earn a degree. Finally, Manno argues that the decline of standards sends the message to high

school students that academic achievement and hard work are not critical because anyone can achieve admission to college.

William Moloney, a member of the Governing Board of the National Assessment of Education Progress, also has voiced frustration over the policy of admitting under-prepared students to college. Moloney (1996) contends that K-12 and higher education must stop the finger pointing and work together in order to rescue American education. After observing signs of cooperative efforts in his home state of Maryland, Moloney wrote:

A reformist State Board of Education is driving toward truly rigorous high school assessments, which will require students to demonstrate fundamental knowledge and ability before being allowed to graduate. No more diplomas for “time served and good behavior.” Simultaneously the state Higher Education Commission is recognizing that it must stop disguising a virtual open admissions policy as a triumph of “access” and start requiring admissions committees to actually insist on some capacity to do college-level work.

CPE Analysis: Educators and legislators in Kentucky must perform a difficult balancing act when it comes to developing workable remedial programs and admissions standards. Kentucky is a state with a long history of low educational attainment. Data from the United States Census Bureau indicate that, from 1980 to 1990, the percentage of adult Kentuckians with a four-year degree or more rose 2.5 percentage points, from 11.1 percent to 13.6 percent. Nationwide, 20.3 percent of adults were college graduates. Despite recent gains in educational attainment, Kentucky currently ranks 48th in the nation in the percentage of its adult population with a college degree. The challenge facing Kentucky’s postsecondary education system in the next century will be to expand access to under-served segments of the population, increase the relatively low graduation rates of students, and enhance the quality of academic programs.

Policies Governing Remedial Education in Kentucky

All remedial courses are designed to prepare students for college-level study. Kentucky’s public colleges and universities provide remedial instruction in math, English (writing), reading and study skills. These courses cannot be applied toward graduation requirements, although they may be used by students to qualify for financial aid. Traditional students (under the age of 25) who have not met Pre-College Curriculum (PCC) requirements (i.e., four units of English, 3 units of math, and 2 units of science and social studies, respectively) are required to take selected remedial courses to satisfy their deficiencies. However, nontraditional students (25 years of age or older) who have PCC deficiencies are not required to take the prescribed courses. No other statewide policies are in place to guide the placement of under-prepared students in remedial courses.

Table 1**Placement Policies for Remedial Math**

Institution	ACT Score Required to By-Pass Remedial Math	Use of Additional Placement Exams
EKU	ACT Math score of 18	Students with ACT scores 15-17 are placed in remedial math based on results of the exam.
KSU	ACT Math score of 19	A placement exam may be used by some departments.
MoSU	ACT Math score of 18	Additional exams are not used.
MuSU	ACT Math score of 19 Students who score below 19 are <i>recommended</i> to take remedial math.	Additional exams are not used.
NKU	ACT Math score of 18	Students with ACT scores 15-17 are placed in remedial math based on results of the exam.
UK	ACT Math score of 18	Students with ACT scores below 18 are placed in remedial math based on results of the exam.
U of L	ACT Math score of 21	Students may challenge remedial placement by taking an exam. All students admitted to the Transitional Studies program are required to take a placement exam.
WKU	ACT Math score of 22	With an ACT Math score below 22, a student's math background and results from a pre-test determine placement in remedial math.
UK Community College System	ACT scores do not usually mandate placement in remedial math.	Placement is generally <i>recommended</i> —rather than required—based on the results of additional placement exams.

However, students who have been identified as under-prepared on the basis of placement exams may or may not be required to take remedial course work. Institutional policies for placing students into remedial math and English are set forth in Tables 1 and 2, respectively.

Each university uses the ACT to place under-prepared students into remedial courses. However, some universities use additional exams to ensure accurate placement or resolve borderline cases. In addition, the cut-off scores for placing students vary considerably from institution to institution. For instance, a student at Northern Kentucky University needs an ACT math score of 18 or above to be placed initially in a college-level math course. If the student scores in the 15 to 17 range, another exam is given, and the results determine whether the student is placed into a remedial-level or a college-level math course.

Table 2

Placement Policies for Remedial English

Institution	ACT Scores Required to By-Pass Remedial English	Use of Additional Placement Exams
EKU	ACT English score of 16	An additional placement exam is also used to place students into remedial English.
KSU	ACT English score of 19	Additional placement exams may be used by some departments.
MoSU	ACT English score of 17	Additional exams are not used.
MuSU	ACT English score of 17	Additional exams are not used.
NKU	ACT English score of 20	Students with ACT scores 15-19 are placed in remedial English based on results of a placement exam.
UK	No remedial English	
U of L	ACT English score of 18	Results from a placement exam may ensure placement in remedial English. All students admitted to the Transitional Studies program are required to take a placement exam.
WKU	ACT English score of 16	An in-class essay is used for placement.
UK Community College System	ACT scores do not usually mandate placement in remedial English.	Placement is generally <i>recommended</i> --rather than required--based on the results of additional placement exams.

On the other hand, a student at Western Kentucky University must score 22 or above on the ACT math test to be placed initially in a college-level math course. If the student scores below 22, the student's math background, coupled with results from a pre-test, determines whether placement in remedial math is necessary.

In the University of Kentucky Community College System (UKCCS), some system-wide policies are in place, but each institution maintains autonomy in developing local remedial policies. Only two of the fourteen community colleges maintain a mandatory remedial requirement for students with deficiencies identified on the basis of high school grades, scores on the ACT, or scores on various placement exams. Most community colleges simply recommend remedial courses to academically under-prepared students. Two community colleges make it somewhat difficult for students to ignore recommendations by requiring them to sign a form acknowledging that they are declining recommended remedial courses.

University and community college students must generally satisfy PCC requirements before they may take entry-level courses. However, remedial students with assessed deficiencies may take non-remedial courses. Universities generally prohibit and community colleges discourage students from taking courses that require skills in which students are deficient. Some universities also require students to earn General Education

credits before being admitted to a baccalaureate degree program. Community colleges differ in how they handle students who disregard the recommendations of advisors. Community college students with identified deficiencies may “exit” the remedial program whenever they choose, just as they may ignore the remedial recommendations of advisors.

CPE Analysis: The lack of comparability in instruments and policies makes it difficult to establish a uniform definition of “college-level work.” The testing instruments and cut-off points for placing students into remedial courses vary considerably among Kentucky’s public colleges and universities. Consequently, remedial course-taking rates are not comparable from institution to institution. The result is that one institution’s remedial student may very likely be another institution’s fully-prepared student. The new Baccalaureate Program Transfer Frameworks are predicated upon a uniform definition of college-level work. Yet, the wide variation in remedial placement policies prevents the postsecondary education community from establishing clear-cut standards for collegiate studies. In his testimony before the SCR 103 legislative task force in 1996, Dr. Ansley Abraham, of the Southern Regional Education Board (SREB), noted that Kentucky is one of only four states in the South without statewide admissions criteria for placing under-prepared students into remedial courses.

The perspectives of employers, parents, and students need to be considered in this public policy issue. Employers need to know if their college-educated employees meet certain minimum standards in knowledge, skills and abilities regardless of the college attended. Parents and students would appreciate the assurance that students do not need to enroll in an extra semester of college simply because their chosen institution has adopted more stringent remedial policies than similar institutions in the state.

Finally, educators at both the secondary and postsecondary levels need to be concerned about the degree to which institutional placement exams are aligned with the high school curricula. Michael Kirst (1997), Professor of Education at Stanford University and co-director of Policy Analysis for California Education, contends that California students face various types of admissions and placement exams that do not possess the same content approach. The different tests are designed to provide answers about student preparation for college, course placement, future success at the universities, and the adequacy of K-12 standards. He points out that none of the university admissions exams is coordinated with the curriculum frameworks established by the State Board of Education.

Kirst (1997) states that the California State University system’s placement exams exemplify several of the problems that may arise when the linkages between K-12 and higher education are weak. For instance, Cal State’s math placement exam, which was designed by a committee of professors, uses a multiple-choice format to assess knowledge of algebra, geometry, and algebra II. Kirst claims that it is highly unlikely that the placement exam tests the math content currently being taught in California’s high schools. In addition, high school students do not have any way of preparing for the exam because they are not told about the test’s contents before taking it, and students who take the test are not given any detailed feedback on their performance. Moreover, the test is not designed to assess student deficiencies in a way that would enable high school

administrators and teachers to address the weaknesses in their math curricula. Finally, no procedures are in place for teachers to learn about the performance of their students on either the Cal State or University of California placement tests.

Further research is needed to determine whether the placement policies at Kentucky's public colleges and universities suffer from the same problems afflicting California's higher education system. For instance, it is not clear to what degree university and community college placement exams in Kentucky reflect the content of high school courses. In the meantime, the following comments of Michael Kirst offer sound advice to educators pondering the direction of education reform:

The national debate about standards and systemic reform has been conducted mostly in isolation between K-12 reformers and university admissions policy makers. Most of the discussion focuses on statewide assessment at various grade levels, and on K-12 curriculum. If there are to be clearer and more consistent signals about what knowledge is most worth possessing, then the linkages between K-12 reform and universities must be strengthened.

The Administration and Delivery of Remedial Courses

A survey conducted by SREB (1992) revealed that the traditional academic department was the predominant way to deliver remedial education in the South. The traditional academic department was used by 41 percent of the institutions in reading, 57 percent in writing, and 58 percent in mathematics. Separate remedial divisions were used to offer remedial courses by about a third of the institutions. At Kentucky's public universities, half of the institutions teach remedial courses in the traditional academic department while the other half offer instruction in a separate division or program. Community college remedial courses are offered by the appropriate academic department.

In Kentucky, those who teach remedial courses include part- and full-time faculty, as well as graduate teaching assistants. Faculty members often hold lower teaching ranks, such as lecturer or instructor. While faculty members with Ph.D.s do teach remedial courses, typically the highest degree earned by most remedial instructors is a master's degree in a related discipline. These findings are fairly consistent with the results of SREB's survey of remedial practices in the South (SREB, 1992).

Three Kentucky universities provide special training for their remedial instructors. On the other hand, community colleges do not generally provide special training for their remedial instructors. By way of comparison, SREB (1992) found that only about one-third of all institutions in its survey reported that ongoing training was available for remedial instructors. Finally, Kentucky's universities and community colleges provide frequent advising, special labs, and tutoring services for remedial students. Two universities and at least three community colleges provide either special facilities or dedicated space for remedial labs or special tutoring services.

Profile of Remedial Students

Educators and policy makers have shown great interest through the years in academic preparation of entering students. The National Center for Education Statistics

(NCES, 1996) found that 29 percent of first-time freshmen took at least one or more remedial course in fall 1995. The remedial needs of freshmen were greatest in the area of mathematics. In the South, about 36 percent of first-time freshmen took at least one remedial course in math, writing, or reading (SREB, 1992). Consistent with the national data, first-time freshmen in the South took considerably more remedial courses in math than they did in writing or reading. Nearly four out of ten first-time freshmen in the SREB states took a remedial math course.

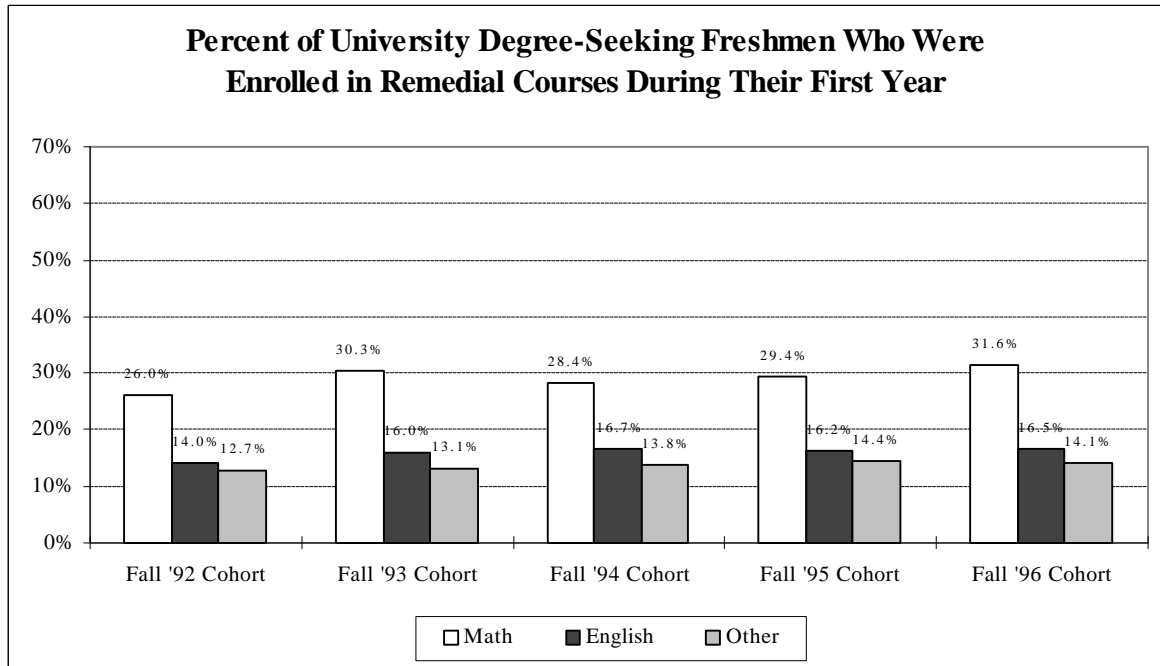
CPE staff examined remedial enrollment data for students who were first-time, degree-seeking freshmen² at one of Kentucky's universities or community colleges from 1992 to 1996. The percentage of first-time, degree-seeking freshmen enrolled in one or more remedial courses during their first year in college rose from 43.0 percent in 1992 to 49.3 percent in 1996. Figures 1 and 2 show the percentage of such students who enrolled in remedial math, remedial English, and "other" remedial courses during their first year at one of the public universities or community colleges, respectively.

From 1992 to 1996, the percentage of university freshmen enrolled in remedial math fluctuated between 26.0 percent and 31.6 percent. Enrollments in remedial English remained fairly constant during this period, ranging from 14.0 percent to 16.7 percent. The percentage of university freshmen enrolled in "other" remedial courses also remained fairly stable from 1992 to 1996, ranging from 12.7 percent to 14.4 percent.

At the community colleges during the same five-year period, enrollment in remedial math courses jumped from 47.0 percent in 1992 to 62.8 percent in 1994 and leveled off in 1995 and 1996. In each of the five years, about one-fourth of the first-time freshmen enrolled in one or more remedial English courses. However, there was a decline in the percentage of first-time freshmen who enrolled in "other" remedial courses, from 16.8 percent to 12.0 percent.

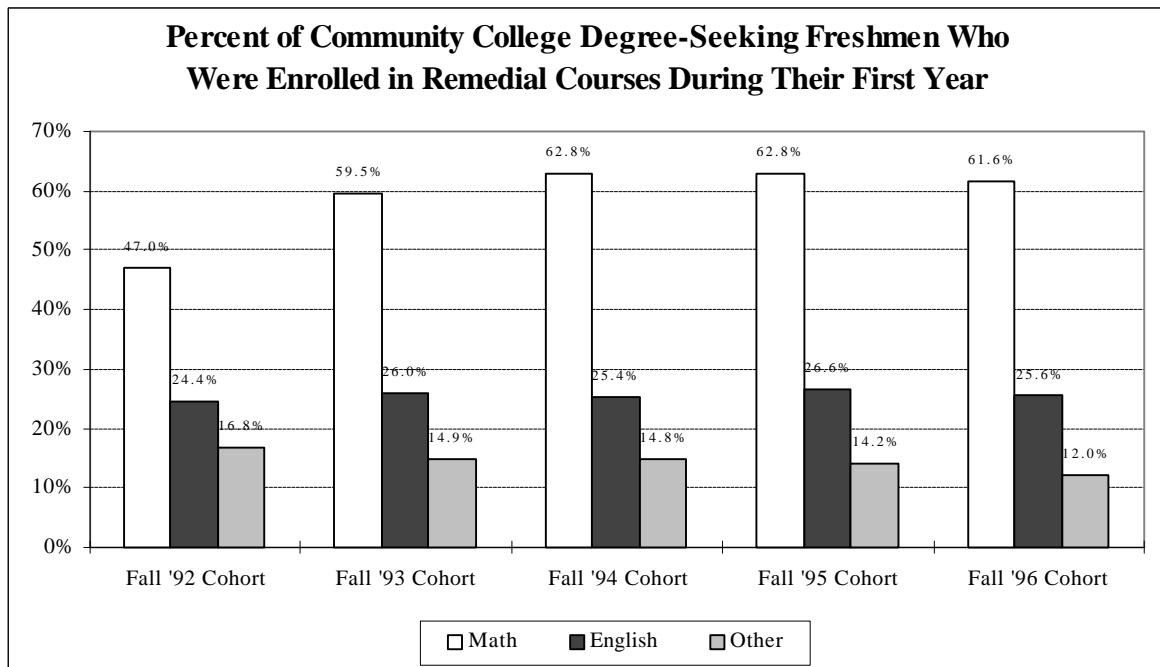
²Additional comparative data on remedial enrollments of first-time freshmen are provided in the annual *Kentucky High School Feedback Reports*. The remedial enrollment rates listed in the feedback reports differ in three significant ways from those cited here. First, the remedial enrollment rates in the feedback reports apply only to first-time freshmen who graduated from high school the previous spring. The enrollment rates listed here include all first-time freshmen. Second, the remedial enrollments rates appearing in the feedback reports are for the fall semester only. The enrollment rates in this report are for an entire academic year. Third, the remedial enrollment rates listed in the feedback reports are calculated by dividing the number of remedial takers in math (or English) by the number of students enrolled in a math (or English) class. The remedial enrollment rates presented in this report are computed by dividing the number of remedial takers in a given discipline by the total first-time freshmen cohort. Consequently, the remedial rates listed in the high school feedback reports will generally be higher than the rates listed here. High school feedback data for 1992 to 1995 are presented in the appendix.

Figure 1



Source: CPE Database

Figure 2



Source: CPE Database

In the process of developing a profile of remedial students, CPE staff examined the patterns of remedial enrollment across various subgroups of students. It is informative to note how these demographic patterns differ at the universities and the community colleges. Because the patterns of remedial enrollment at universities and community colleges were fairly consistent from fall 1992 to fall 1996, tables 3 and 4 include data only for the fall 1996 first-time freshmen cohorts.

Table 3
Percent of University First-Time Degree-Seeking Freshmen
Enrolled in One or More Remedial Courses
Students Beginning in Fall 1996

Subgroups	Number in Subgroup	% Enrolled in Remedial Course			Any Remedial Course
		Math	English	Other	
All Students	13,463	31.6%	16.5%	14.1%	37.3%
Race					
Black	1,320	57.2%	44.5%	35.4%	77.0%
White	11,751	29.1%	13.3%	11.8%	34.3%
Other	392	20.9%	15.3%	11.2%	29.6%
Gender					
Female	7,282	32.3%	14.2%	13.0%	36.9%
Male	6,181	30.8%	19.1%	15.5%	37.9%
Age					
Traditional	13,041	30.9%	16.0%	13.8%	36.5%
Non-Traditional	422	52.8%	31.0%	23.9%	62.3%
Enrollment Status					
Full-Time	12,889	31.1%	16.1%	13.9%	36.7%
Part-Time	574	43.2%	25.4%	19.9%	52.8%
Directly Out of H.S.					
Yes	11,829	29.3%	14.9%	13.2%	34.8%
No	1,634	47.9%	17.7%	21.1%	55.4%

At the universities:

- African-Americans enrolled in remedial courses at more than twice the rate of whites, 77.0 percent compared to 34.3 percent.
- Females were more likely than males to enroll in remedial math courses and less likely to enroll in remedial English courses.
- Nearly two-thirds (62.3%) of the nontraditional students enrolled in at least one remedial course, compared to about one-third (36.5%) of the traditional students.

- Students who entered the university on a part-time basis (52.8%) were more likely than full-time students (36.7%) to take a remedial course.
- Students who delayed their entry from high school into the university (55.4%) were more likely to enroll in remedial courses than students who went directly into college from high school (34.8%).

The differences in remedial enrollment among these subgroups are fairly consistent for each of the remedial subjects: remedial math, remedial English, and “other” remedial courses.

Table 4
Percent of Community College First-Time Degree-Seeking Freshmen
Enrolled in One or More Remedial Courses
Students Beginning in Fall 1996

Subgroups	Number in Subgroup	% Enrolled in Remedial Course			Any Remedial Course
		Math	English	Other	
All Students	8,872	61.9%	25.6%	12.0%	67.5%
<u>Race</u>					
Black	608	66.8%	40.0%	33.1%	75.3%
White	7,838	61.8%	24.0%	10.2%	66.8%
Other	426	50.9%	35.4%	14.3%	65.5%
<u>Gender</u>					
Female	5,238	64.2%	26.5%	13.2%	69.9%
Male	3,634	57.9%	24.4%	10.2%	63.7%
<u>Age</u>					
Traditional	7,325	62.0%	23.9%	11.4%	67.2%
Non-Traditional	1,547	59.9%	33.5%	14.7%	67.9%
<u>Enrollment Status</u>					
Full-Time	6,463	68.8%	27.7%	13.2%	73.1%
Part-Time	2,409	42.5%	20.0%	8.8%	51.9%
<u>Directly Out of H.S.</u>					
Yes	5,549	63.1%	23.8%	11.0%	68.0%
No	3,323	59.2%	28.6%	13.5%	66.3%

At the community colleges:

- African-Americans enrolled in remedial courses at a higher rate than whites, 75.3 percent compared to 66.8 percent;
- Females were more likely than males to enroll in remedial courses, 69.9 percent compared to 63.7 percent;
- Students of traditional and nontraditional ages enrolled in remedial courses at about the same rate;

- Full-time students (73.1 percent) were far more likely to enroll in at least one remedial course than part-time students (51.9 percent); and
- Students who entered college directly out of high school were somewhat more likely than students who delayed their entry to enroll in remedial math courses (63.1 percent compared to 59.2 percent), but were less likely to enroll in remedial English courses (23.8 percent compared to 28.6 percent).

The patterns of remedial enrollment by student subgroups at the community colleges are quite different than the patterns of remedial enrollment at the universities. Contrary to expectations, community college students who enrolled initially on a part-time basis were less likely than full-time students to take remedial courses. On the other hand, part-time university students were more likely to take remedial courses than full-time students. Nontraditional community college students enrolled in remedial courses at about the same rate as traditional students, but nontraditional university students were far more likely to take remedial courses than traditional students.

During the process of compiling this profile on the preparation of first-time freshmen, Council staff identified a number of students who were well into their college careers when they enrolled in remedial courses. During fall 1996, 13.9 percent of the university students enrolled in remedial courses were sophomores, juniors, or seniors. This pool of remedial students ranged from 7.1 percent to 30 percent at the eight public universities. The Council may want to take a closer look at institutional policies that would permit students to remediate their academic deficiencies at a relatively late point in their college studies.

Efforts to Evaluate the Effectiveness of Remedial Education

The remedial follow-up analysis presented in the Annual Accountability Report Series of Kentucky Higher Education examines the number of students who pass remedial English and math courses. The analysis also reports on the percentage of students who successfully complete entry-level courses (i.e., first non-remedial courses) in these disciplines by earning a grade of C or better. Students sometimes require remediation in other subjects, but the bulk of remedial work occurs in English and math; therefore, the annual reports focus on these disciplines. Students enrolled in remedial English and math courses are tracked for four semesters to evaluate their success in completing entry-level courses. The four-semester tracking period accounts for the use of relatively “old” data, such as the fall 1994 remedial cohort featured in this report.

System-wide, a total of 18,164 students were enrolled in remedial math courses, while 5,564 students were enrolled in remedial English courses in fall 1994. The community colleges enrolled the majority of students who took remedial math (63.7 percent) and remedial English (54.6 percent). As a percentage of the lower division headcount, university enrollments in remedial math and English remained constant from fall 1990 to fall 1994 (ranging from 14.8 percent to 16.0 percent in remedial math and 5.3 percent to 6.1 percent in remedial English). The significant growth in remedial enrollments, particularly in remedial English, occurred at the University of Kentucky

Community College System (UKCCS). While UKCCS enrollments grew 11.8 percent between fall 1990 and fall 1994, remedial math enrollments rose 23.1 percent and remedial English enrollments increased 49.0 percent.

Pass Rates in Remedial Courses.

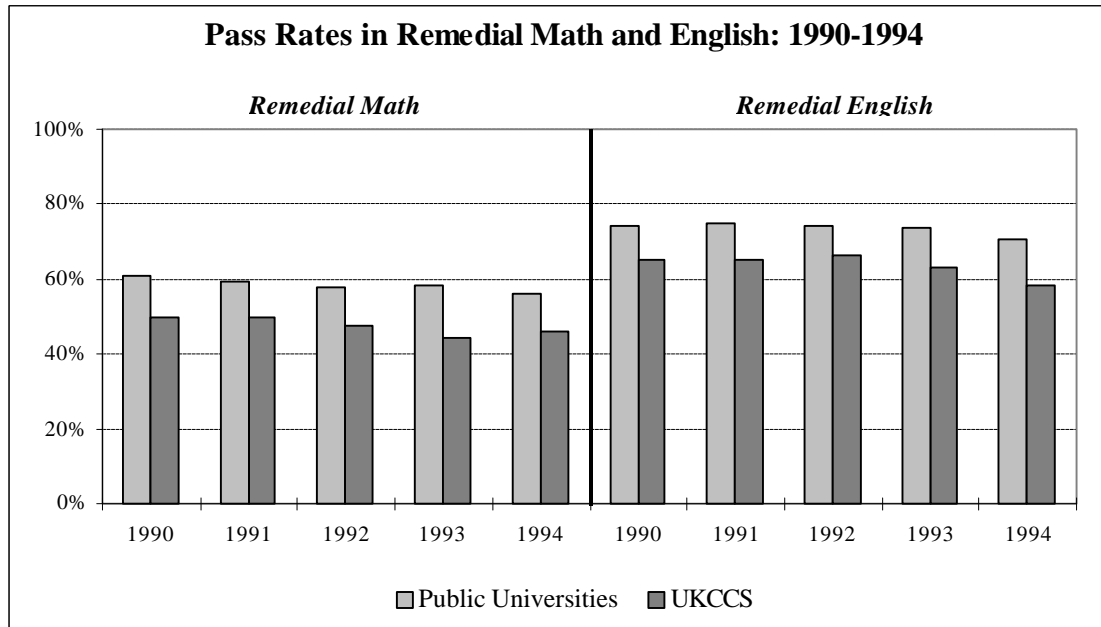
University Sector Results

During fall 1994, nearly six out of ten university students enrolled in remedial math passed their remedial courses with a grade of C or higher (see Figure 3). The remedial math pass rate for university students was five percentage points below the 1990 baseline pass rate. At the eight universities, the fall 1994 remedial math pass rates ranged from 39.4 percent to 67.5 percent. Seven out of ten students enrolled in remedial English in fall 1994 passed their remedial courses with a C or higher grade. Across the five cohorts studied, the pass rates for university students in remedial English ranged from 70.8 percent to 74.8 percent. In fall 1994, the remedial pass rates at the eight universities ranged from 56.1 to 80.9 percent.

Community College Sector Results

Less than half of the community college students who took remedial math in fall 1994 passed their remedial courses with a C or higher grade. The remedial math pass rates for community college students fluctuated between 44.6 percent and 49.9 percent across the five cohorts examined. At the 14 community colleges, the fall 1994 remedial math pass rates ranged from 38.3 percent to 62.2 percent.

Figure 3



Note: A passing grade is a 'C' or better.

Source: CPE Database

Six out of ten community college students who took remedial English during fall 1994 passed their remedial courses with a C or higher grade. The 1994 pass rate of 58

percent in remedial English was seven percentage points below the 1990 baseline pass rate and 9 percentage points below the pass rate for the 1992 cohort. In fall 1994, 35.7 percent of the students passed remedial English at one community college while 66.5 percent of the students passed at another community college.

Two significant conclusions can be drawn after five years of tracking remedial course outcomes. First, students generally have greater difficulty passing remedial math than remedial English. Second, university students tend to do better than community college students in both remedial math and remedial English. Differences in remedial pass rates also emerged according to the ethnicity, gender, and age of the students. Based upon the performance of students in fall 1994, the following generalizations can be made:

- African-Americans were less likely to pass remedial math at the universities and less likely to pass remedial math and English at the community colleges;
- Females did significantly better than males in remedial math and English at the universities and community colleges; and
- Nontraditional students were more likely than traditional students to pass remedial math at the universities and more likely to pass remedial math and English at the community colleges.

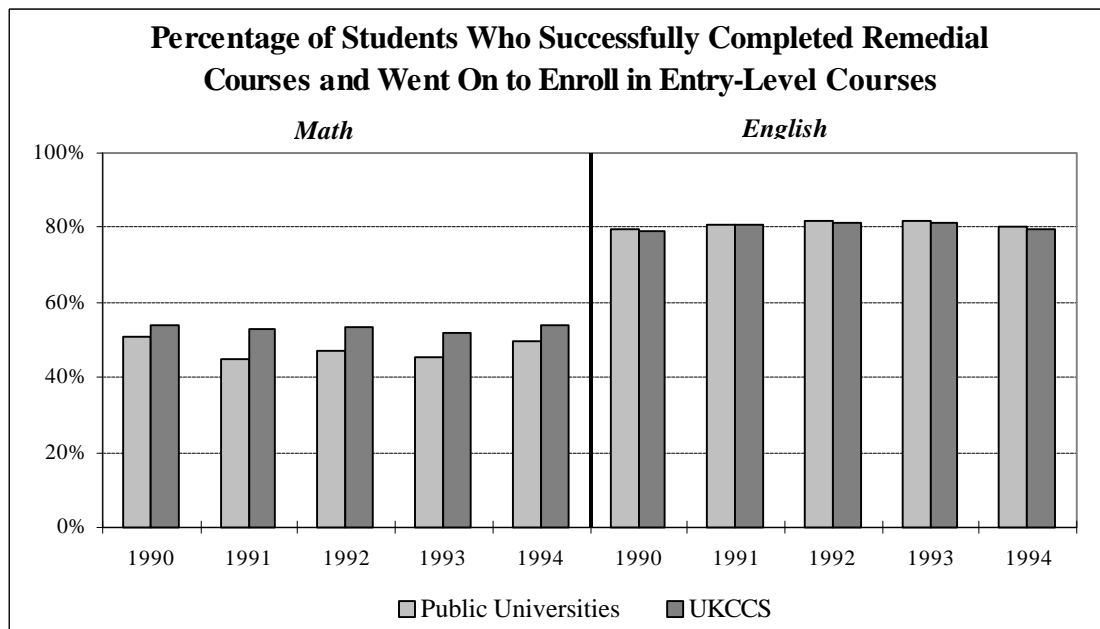


Figure 4

Note: Students are tracked for four semesters.
Source: CPE Database

Participation Rates of Remedial Students in Entry-level Courses. Figure 4 shows that

nearly half of the university students who successfully completed a remedial math course went on to enroll in an entry-level math course during the 4-semester tracking period. At the community colleges, between 54 percent and 60 percent of the remediated math students took an entry-level math course after completing their remedial work. The percentage of university and community college students who took remedial English and who later enrolled in an entry-level English course has remained at about 80 percent. The following demographic differences in entry-level participation rates emerged:

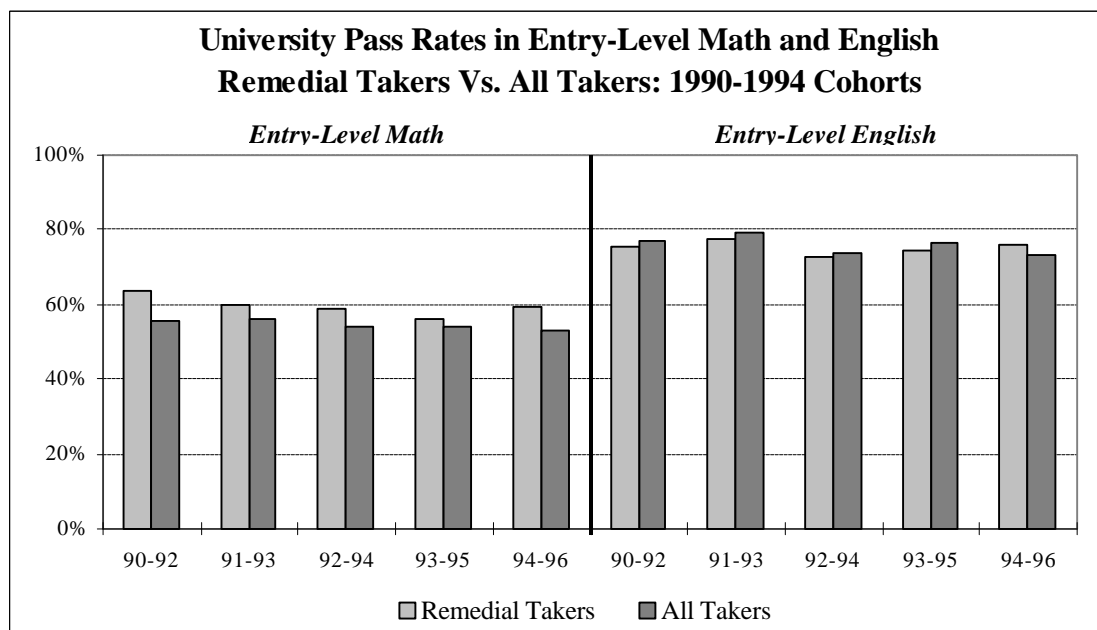
- African-Americans were more likely than whites to take entry-level courses at the universities and less likely to take entry-level courses at the community colleges after passing remedial courses; and
- Females were more likely than males to enroll in entry-level courses after passing their remedial courses.

Pass Rates in Entry-Level Courses.

University Sector Results

Of those university students who passed remedial math in fall 1994 and went on to take an entry-level course, nearly six out of ten successfully completed their courses with a C or higher grade--a pass rate above that for all entry-level course takers (59.6 percent vs. 52.9 percent). At seven of the eight universities, the remediated students performed better than “all takers” in entry-level math courses. The pass rate for remediated students in entry-level math has fluctuated between 55.9 percent and 63.8

Figure 5



Note: Students are tracked for four semesters. A passing grade is a 'C' or Better.

Source: CPE Database

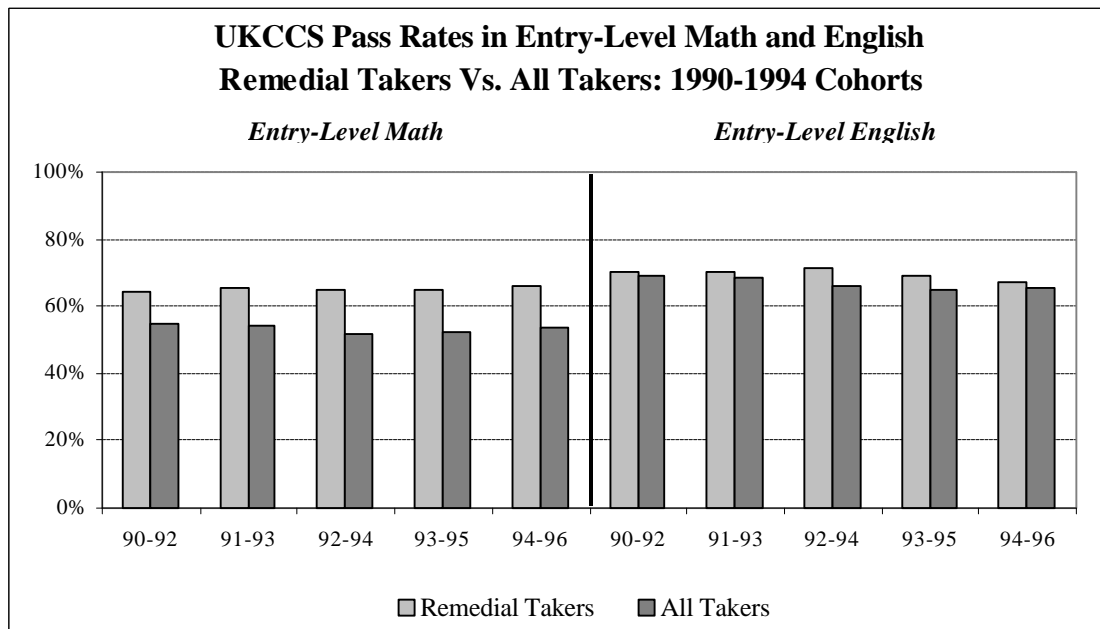
percent across the five year reporting period (see Figure 5). Of those university students

who passed remedial English in fall 1994 and went on to take an entry-level course, more than three-quarters successfully completed the course with a C or higher grade--a pass rate above that for all entry-level takers (76.1 percent vs. 73.0 percent). At four of the seven universities that offer remedial English, the remediated students performed better than “all takers” in entry-level English courses. The pass rate for remediated students in entry-level English fluctuated between 72.9 percent and 77.8 percent across the five cohorts examined.

Community College Sector Results

Of those community college students who passed remedial math in fall 1994 and went on to take an entry-level course, two-thirds successfully completed the course with a C or higher grade--a pass rate considerably above that for all entry-level course takers (66.3 percent vs. 53.5 percent). Of those community college students who passed remedial English in fall 1994 and went on to take an entry-level course, seven out of ten students successfully completed the course with a C or higher grade--a pass rate slightly above that for all entry-level course takers (67.1 percent vs. 65.3 percent). The

Figure 6



Note: Students are tracked for four semesters. A passing grade is a 'C' or Better.
Source: CPE Database

entry-level math and English pass rates for remediated students have remained steady across the five cohorts examined (see Figure 6). At the community college system level, the pass rates of remedial math and English takers surpassed those for all entry-level takers in all five years of the reporting period. The most noteworthy differences in the

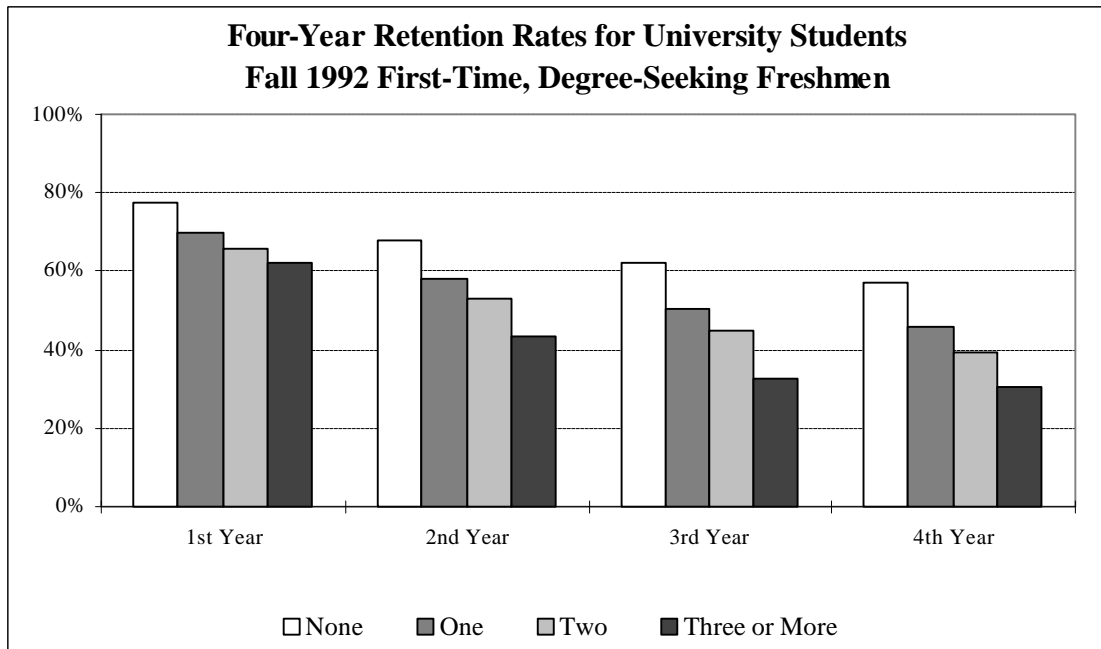
entry-level pass rates of various student subgroups are the following:

- African-Americans were less likely than whites to pass entry-level math and English at both the universities and community colleges;
- Females passed their entry-level math and English courses at a higher rate than males at both the universities and community colleges; and
- Nontraditional students were more likely than traditional students to pass entry-level math and English at the universities and the community colleges.

Retention Rates of Remedial and Non-Remedial Students. Several statewide studies have shown that well-prepared students have higher retention and graduation rates than students who must take remedial course work (Boylan, 1996; Georgia Board of Regents, 1995; Maryland Higher Education Commission, 1996). The annual retention rates presented in Figure 7 and Figure 8 reflect the percentage of first-time, degree-seeking freshmen who returned to college in successive years. Students who graduated from their original institution or who transferred to another public institution in Kentucky are figured into the annual rates. Figure 7 depicts the retention rates of fall 1992 university freshmen who took varying numbers of remedial courses during their first year in college. Consistent with previous research, the graph reveals that university students who do not take a remedial course have significantly higher retention rates from year to year than students who take one, two, or three or more remedial courses during their first year in college. Figure 8 presents one- and two-year retention rates for the fall 1992 cohort of degree-seeking freshmen at the community colleges. The graph reveals an important finding that differs from the pattern of results for university freshmen. In contrast to the relatively high retention rates of non-remedial university students, non-remedial community college students generally do not have a higher retention rate than their counterparts who take remedial courses.

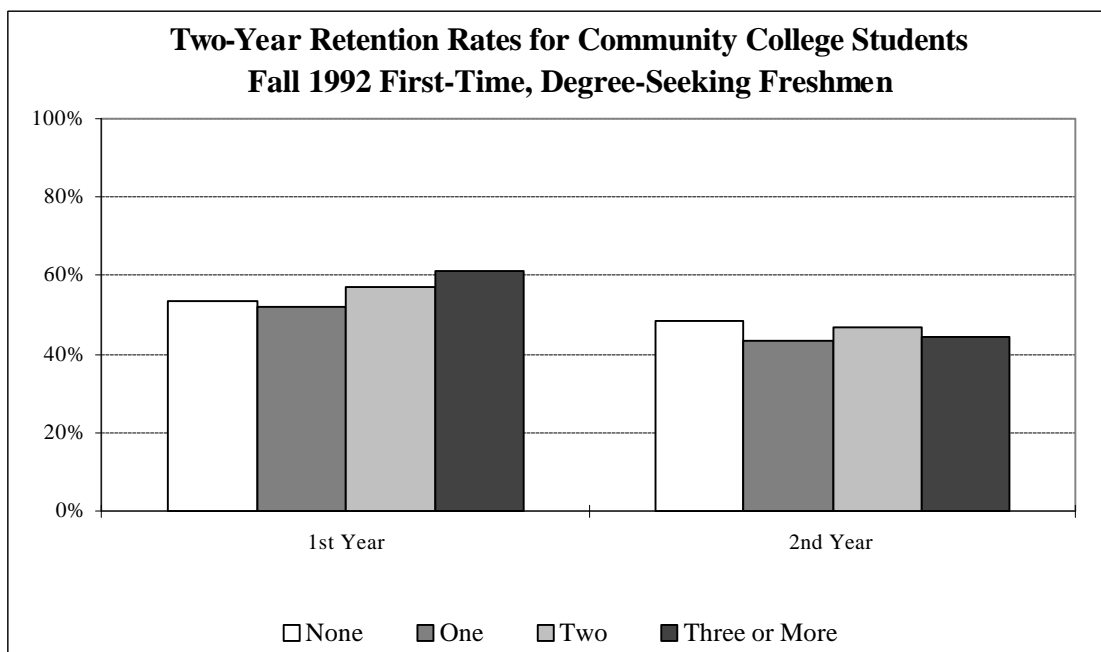
CPE Analysis. In an effort to shed further light on these findings, CPE staff examined differences in the remedial enrollment and retention patterns of community college and university students. The analysis sorted the fall 1992 cohort into several demographic groups and examined not only their participation in remedial courses but also their respective retention rates. Consistent with the profile developed for first-time freshmen from fall 1996, community college students who began their studies on a part-time basis were less likely than full-time students to enroll in remedial course work. On the other hand, part-time university students were more likely to take remedial courses than full-time students. Nontraditional community college students took remedial courses at about the same rate as traditional students, but at the universities nontraditional students were far more likely to take remedial courses than traditional students

Figure 7



Source: CPE Database

Figure 8



Source: CPE Database

The retention analysis of community college and university students also uncovered two significant findings that were consistent at both the community college and university sectors. (The results of this retention analysis are located in Table 1 of the appendix.) The analysis revealed the following sets of findings:

- Part-time and nontraditional students who did not take remedial courses had lower retention rates than their full-time and traditional age counterparts; and
- Unlike full-time and traditional age students, part-time and nontraditional students had higher retention rates if they took at least one remedial course.

The relatively large proportion of part-time and nontraditional students attending the community colleges and the empirical findings listed above explain, in part, why the retention rate for non-remedial community college students is generally no better than for students who undertake remedial course work. Other factors also may account for the relatively low retention rates of community college students who do not receive remedial instruction. A convincing case can be made that specific policies involving course placement and the PCC exert a negative impact upon the retention patterns of community college students, particularly the nontraditional students who comprised 50 percent of the UKCCS enrollment in fall 1992. First, community college students who have met PCC requirements--but who also have identifiable skill deficits--are generally not required to take remedial courses. Second, nontraditional students are exempt from having to meet PCC requirements. Consequently, the group of non-remedial students appearing in Figure 8 is actually composed of a fair number of students with assessed deficiencies, and many of these students are part-time and older adult students. Perhaps, part-time and nontraditional students realize that it is going to take a long time for them to meet their educational objectives. As a result, they may be reluctant to take remedial courses that will not count toward graduation at either a community college or a four-year institution they eventually plan to attend. Alternatively, part-time and nontraditional students may experience difficulties finding remedial courses that are available during the relatively few hours that they are free from work and family responsibilities. These scenarios may account for the relatively low retention rates of community college students who have not taken any remedial courses.

The retention rate analysis presented above suggests that older adult community college students may not receive sufficient remediation to maximize their chances of success. It should be emphasized that nontraditional community college students take remedial courses at about the same rate as traditional students, but at the universities nontraditional students are more likely to take remedial courses than traditional students. This pattern of participation in remedial courses may be the product of various social comparison processes. To be sure, a nontraditional university student may doubt her ability to compete in an entry-level math course with the great majority of freshmen who graduated from high school the previous spring. As a result, she may feel the need to enroll in a remedial course before tackling subject matter that she has not studied in a number of years. On the other hand, a nontraditional community college student may feel that her math skills are comparable to most of the other older adult students on campus. Consequently, she may not feel compelled to enroll in a remedial course to enhance her current skills.

Current policies may do a disservice to many nontraditional and part-time students by allowing them to avoid remedial course work that is essential to their later success in college. It is important to note that nontraditional students perform well when they take remedial courses. The CPE staff analysis revealed that nontraditional students are more likely than traditional students to succeed in remedial and entry-level courses. The superior performance of nontraditional students was demonstrated in both the community college and university sectors. CPE's policy of exempting nontraditional students from meeting PCC requirements was implemented in an effort to be sensitive to the needs of older students who enter college a number of years after graduating from high school. The policy may still be a reasonable one, provided that students are assessed for skill deficiencies and are required to remediate any deficiencies that are identified. Thus, nontraditional students would still be exempt from having to go back to high school to comply with the PCC. However, older adults and community college students in general would have to demonstrate various competencies before being allowed to enroll in college-level courses.

The Funding of Remedial Education

Table 5 presents information on the actual direct cost of remedial education in 1994/95, along with estimated tuition revenue generated by the remedial course activity. The direct cost of remedial instruction ranged from \$18,900 to \$851,300, while the estimated revenue generated through tuition ranged from \$59,200 to \$2,028,500. Consequently, the tuition associated with these courses more than covers the actual expenditures at most universities. In fact, one university generated more than one half million dollars in excess tuition revenue over direct costs while another university produced more than one million dollars in excess tuition revenue over direct costs. Thus, a substantial amount of excess tuition revenue was generated at two universities that could be allotted to other programs and services. At the UKCCS, the actual cost of instruction was \$5,268,600, and the tuition revenue generated was \$3,844,300; therefore, a total of \$1,424,300 of state general funds was required.

All in all, the financial data indicate that the direct cost of remedial education has been largely self-supporting at the universities and requires under \$1.5 million in the community college system.

CPE Analysis: An analysis of the financial data indicates that the institutions are more than adequately funded to provide remedial instruction. At the system level, institutional data suggest that the direct costs of remedial instruction are generally covered by the tuition associated with these courses.

Table 5

**Cost of Remedial Instruction
Actual 1994/95 Expenditures**

Institutions	Direct Cost of Instruction	Estimated Tuition Revenue	Excess Tuition Revenue	Net State General Fund Expended*
Eastern Kentucky University	693,600	882,100	188,500	---
Kentucky State University	241,100	199,400	---	41,700
Morehead State University	220,600	213,100	---	7,500
Murray State University	107,400	170,800	63,400	---
Northern Kentucky University	470,900	1,034,300	563,400	---
University of Kentucky University System	18,900	59,200	40,300	---
University of Louisville	851,300	2,028,500	1,177,200	---
Western Kentucky University	278,900	484,600	205,700	---
UNIVERSITY SECTOR TOTAL	2,882,700	5,072,000	2,238,500	49,200
COMMUNITY COLLEGE SYSTEM	5,268,600	3,844,300	---	1,424,300

* Direct cost of instruction minus estimated tuition revenue, as reported by the institutions.

Source: The eight public universities and the UKCCS.

Legislators, CPE members, and other policy makers have debated whether the state can afford to pay twice for the instruction of basic skills, once in high school and again in college. In his recent presentation to a legislative task force, Dr. Abraham said that six states (Florida, New Jersey, Montana, Washington, West Virginia and Wisconsin) are considering legislation to require students or high schools to pay the cost of remedial course work. In addition, the Maryland Higher Education Commission's 1996 study of remedial education mentions that campuses may want to consider assessing special fees to students to offset a portion of the costs of remedial instruction. Currently, only one community college in Maryland assesses such fees for remedial services. In a similar vein, the Washington State Higher Education Coordinating Board's 1996 report to the legislature on remedial education recommends that the state should limit the number of times it will fund the same remedial course for a student.

Recently, some colleges and universities have explored the use of private contractors to handle the remediation of students on their campuses. *The Chronicle of Higher Education* for the week of September 19, 1997, reports that Kaplan Educational Centers and Sylvan Learning Systems are now developing, managing, and instructing remedial courses at several colleges. For example, in its contract with Greenville Technical College, Kaplan may gross over \$700,000 annually. In 1997, Greenville Tech will outsource over 10,000 remedial credit hours to Kaplan at a rate of about \$75 per

credit hour. However, college officials note that Kaplan will allot approximately \$300,000 (i.e., about \$20 per credit hour) to pay the salaries of teachers already employed by Greenville Tech. Kaplan also offers six-hour workshops to prepare incoming freshmen for various placement tests at Greenville Tech. Moreover, the company is now designing a few “fast-track” courses, which will enable a student with minimal deficiencies to begin studies in November and enter a degree-granting program by the first of the year. Evaluation studies are in progress, but no firm statistical evidence is available to document the effectiveness of the two firms’ approaches to remedial studies.

Policy Issues Related to Remedial Education

In recent years, it has become fashionable in policy circles to talk about the “seamless web” of education from P-12 and on through postsecondary education. This approach suggests that efforts to improve student preparation for college may be most successful when they are planned and carried out in collaboration with teachers and administrators at the primary and secondary levels. College admission requirements and high school graduation requirements can be thought of as opposite sides of the same coin. In the global economy of the twenty-first century, high school graduates must have critical thinking skills that prepare them for some form of postsecondary education. Ideally, any student graduating from high school should have the necessary preparation for tackling college-level studies. It is imperative that college admissions requirements and high school graduation requirements send the same message to high school students about the importance of developing communication skills and problem-solving abilities through a sequence of rigorous courses.

Many educators across the nation believe that college admissions requirements exert an impact not only upon the high school curricula but also upon the courses high school students take. College admissions requirements also influence the college curriculum, including the remedial courses offered on campus. By driving students’ level of preparation, college admissions requirements indirectly affect student retention and graduation rates. In 1983, the National Commission on Educational Excellence (NCEE) responded to the declining levels of high school achievement. The panel recommended that college-bound students complete a program of study that included four years of English, three years of mathematics, three years of science, three years of social studies, two years of foreign language, and one-half year of computer studies.

Kentucky’s Pre-College Curriculum (PCC). In its study of Kentucky higher education, the original Prichard Committee on Higher Education in Kentucky’s Future (1981) concluded that increasing numbers of high school students entering Kentucky’s colleges and universities were not adequately prepared for college-level work. The Prichard Committee recommended the establishment of an appropriate “pre-college curriculum” (PCC) to be required of all students entering the state’s public universities. The original PCC requirements were developed by a special committee with membership from the higher education community, secondary education, the Kentucky Department of Education, and the general public. The panel’s recommendations were approved by the CPE in January 1983. The new requirements were later reviewed and revised by a similar committee in 1989/90 and adopted by the CPE in November 1990. The PCC requires college-bound students to meet the following course requirements:

- English - 4 units;
- math - 3 units;
- social studies - 2 units; and
- science - 2 units.

The CPE stipulated that by 1994/95 the number of baccalaureate-degree status students admitted conditionally at each university without the minimum educational preparation qualifications be reduced from 20 percent to 5 percent of the base figure³. The transition from 20 percent to 5 percent was initiated with 15 percent conditional admissions acceptable for 1992/93, 10 percent for 1993/94, and 5 percent for 1994/95. The PCC is not used as admissions criteria for the community college or for community college-type programs at universities. However, students in associate degree programs must generally correct any PCC deficiencies prior to completing 24 hours of degree credit. Nontraditional students (age 25 or above) are excluded from this requirement.

It is worth noting that the PCC is not as stringent as the core curricula set forth by the NCEE and ACT. Like the NCEE curriculum, the ACT core calls for an additional year of social studies and science, respectively. However, unlike the NCEE curriculum, the ACT does not prescribe courses in foreign languages or computer skills. ACT has conducted a considerable amount of research demonstrating that students who take the ACT core perform better in college than students who take less than the core sequence of courses. Currently, Kentucky has the lowest percentage of high school graduates completing the ACT core or more in the nation.

Last year, ACT researchers examined specific sequences of courses taken by students in order to determine their relationships to ACT scores (ACT, 1996). They found that students' course work was highly correlated with their performance on the ACT. As documented in previous research, students who took a minimal core curriculum in mathematics (algebra 1, algebra 2, and geometry) out-performed students who did not take these courses. Moreover, the researchers found that average ACT scores increased significantly for each additional math course taken. For instance, ACT Math scores for students who took trigonometry were 2.7 points higher than the scores of students who took the minimal core sequence.

In science, ACT researchers uncovered a similar pattern of results. Students who took a core science sequence (general science, biology, and chemistry) scored 1.4 points higher than their peers on the Science Reasoning test. Students who took physics outscored other students on the Science Reasoning test by 2.5 points. Similar--but less dramatic--correlations were observed for English and the social sciences. Of course, one cannot simply conclude that taking additional courses in these subjects will automatically have a positive effect upon ACT scores and the subsequent likelihood of being placed into college-level courses. These findings are undoubtedly influenced by the fact that the better prepared students are more predisposed to taking challenging courses. Nevertheless, the bulk of education research shows that students respond favorably to high expectations and standards for their performance.

³This figure was to be determined by computing the number of students enrolled in baccalaureate programs during the preceding four years.

New High School Graduation Requirements. At its February, 1997 meeting the Kentucky Board of Education approved new requirements for graduation from Kentucky's high schools. These new requirements were approved as administrative regulations on July 2, 1997. The graduating class of 2002 will be the first group of students to be affected by the new requirements. The specific course requirements are listed below:

- Language Arts - 4 credits (including English I, II, III, and IV);
- Social Studies - 3 credits (to incorporate U.S. History, Economics, Government, World Geography and World Civilization);
- Mathematics - 3 credits (including Algebra I, Geometry, and one elective as provided in the program of studies (704 KAR 3:303);
- Science - 3 credits (including life science, physical science and earth and space science as provided in the program of studies (704 KAR 3:303);
- Health - ½ credit;
- Physical Education - ½ credit;
- History and Appreciation of Visual and Performing Arts (or a performing arts course which incorporates such content) - 1 credit; and
- Electives - 7 credits

High school restructuring was introduced on an experimental basis in 1993 with just 68 volunteer high schools. These schools piloted all or some of the following five high school restructuring components recommended in June 1993 by the Task Force on High School Restructuring: individual graduation plans, integrated academic portfolios, student-initiated culminating projects, school-sponsored activities, and exit reviews. Several universities are now piloting admissions and placement processes which take into account student portfolios.

CPE Analysis. As high school restructuring unfolds, it is anticipated that strengths and weaknesses will be delineated, and workable components of the 21st century high school will become relatively common across Kentucky. These changes will have an impact on postsecondary education in at least three ways. First, expectations of incoming freshmen will be much different given their high school experiences with collaborative learning, performance assessment, and student-centered instruction. Second, admissions and placement decisions are likely to use demonstrated learning outcomes and performance criteria, rather than rely exclusively upon transcripts, which clearly delineate subjects, grades and standardized scores. Third, prospective high school teachers will need preparatory programs that emphasize interdisciplinary, performance-based content and instructional strategies. As change takes place in the high school experience,

opportunities for closer collaboration among colleges, universities, and high schools will emerge. Innovative senior year experiences which include increased collegiate enrollment for prepared students and expanded use of advanced placement courses will not only prepare students better but also decrease students' time to degree.

Currently, a mismatch exists between the high school graduation requirements and the PCC. The graduation requirements are now more stringent than the standards developed for admission to college. Consequently, unless the PCC is changed, students will be receiving a mixed message about what is expected of them. In the upcoming months, the Council will want to examine the adequacy of the PCC and explore whether other admissions requirements are needed.

Competency-Based Admissions Policies. The Council's growing emphasis on student outcomes has generated some interest in revising the current admissions requirements. The new standards would emphasize an applicant's level of achievement--not just the completion of specific courses. Existing criteria may not provide enough diagnostic information to determine adequately a student's level of readiness. For instance, knowing that a student sat through three years of math classes may indicate very little about that student's ability. Thus, if Kentucky eventually formulates policies to direct under-prepared students to community college programs, statistically valid predictors of college success would need to be developed for the purpose of making difficult placement decisions

To develop valid predictors of college success, appropriate instruments and measures must be selected for further study. Many other states use high school grades, high school rank, and minimum scores on an admissions test (e.g., ACT or SAT) to decide whether to admit an applicant. These criteria and the Kentucky Instructional Results Information System (KIRIS), used to assess school performance under KERA, should be examined to learn whether they can help admissions officers make accurate predictions about a student's performance in college.

In order to incorporate KIRIS results into the college admission process, research must determine whether KIRIS results are reliable at the individual student level, not just the school level. Research also must determine whether KIRIS results are statistically valid predictors of persistence, overall grade point averages, and other measures of college success. The CPE and the Department of Education are now jointly coordinating a study among the public universities and community colleges that will examine the degree to which the KIRIS assessment, ACT subscores, and high school grades predict performance in college.

Finally, high school restructuring, which is required to implement KERA instructional strategies, has generated some questions about the applicability of the PCC, with its emphasis on courses as units of instruction. Implementing fundamental change in the organization of instruction is a long-term proposition. In the near future, however, policy makers will need to decide whether to expand the number of courses required by the PCC to conform to the new high school graduation requirements and the recommendations by NCEE and ACT. In addition, policy makers should examine the

need to set minimum ACT scores and grades for PCC courses.

A Second Look at the Issue of Access in Postsecondary Education.

In recent years, the public has demanded that higher education spend its funds more efficiently. Consequently, many state decision makers are debating whether to restrict remedial education to less expensive programs offered at community colleges. Dr. Ansley Abraham of SREB reports that Colorado, Florida and South Carolina now statutorily prohibit remedial education at four-year institutions and limit the administration of remedial programs to two-year colleges. Eight states (Georgia, Maryland, Minnesota, Missouri, Nevada, New York, Ohio, and Virginia) are considering whether to restrict remedial offerings to two-year institutions. Dr. Abraham points out that all of the above institutions are concerned about the effect such policies would have upon access to four-year institutions. He notes that over half of all minority students require some degree of remediation when they enter higher education. Moreover, the majority of students who begin their studies at a two-year institution never transfer to a four-year institution.

Policy makers in Nebraska have responded to a situation that is similar to the one that Kentucky now faces. In Nebraska's *Comprehensive Statewide Plan for Postsecondary Education (1992)*, the planners state:

Our citizens hold highly the belief that postsecondary education opportunity should be readily available to them. There is, however, a balance between perceived need for access and the state's ability to provide that access. Citizens must realize that the state cannot afford to provide everything for everyone. . .

Students do not have equal abilities, interests and motivation. They certainly do not come to postsecondary education with equivalent preparation. An appropriate goal of postsecondary education is to provide access to postsecondary education consistent with each person's abilities at any given point in his or her growth.

If Council members decide to implement a similar policy, statistically valid predictors of college success should be used to determine a student's abilities for appropriate entry into the postsecondary education system. In developing policies in this area, it may be important for the Council to recognize that students vary considerably in the range of deficiencies they bring to postsecondary education. Some students with low ACT Composite scores have not mastered skills in a number of disciplines; others with "average" or "above average" ACT Composite scores may have more limited gaps in preparation.

In an effort to recognize the broad spectrum of students' achievement levels, Oregon's strategic plan offered the following recommendation: "Institutions may offer developmental programs for students with minor deficiencies in basic skill areas. Students broadly deficient in basic skills will be referred to community colleges if a community college is within the area until their deficiencies are corrected." Thus, Oregon restricts developmental courses offered at state colleges and universities to limited instances in which the student needs only to "catch up" in one area. Oregon's plan concludes that "The system's emphasis must turn to better serving the students it admits,

while screening out those students who clearly cannot succeed in college-level work without major remediation."

In formulating remedial policies, the Council may also need to consider the age of students who attend colleges and universities. Staff examined the remedial follow-up data in the *Baseline Accountability Reports* to assess the performance of traditional (i.e., under age 25) and nontraditional (25 and older) students. The following generalizations can be drawn from the data:

- Nontraditional students were more likely than traditional students to pass remedial math at the universities, and more likely to pass remedial math and English at the community colleges; and
- Nontraditional students out-performed traditional students in entry-level math and English courses at both the universities and community colleges.

The superior performance of nontraditional students possibly may be due to their high degree of motivation to succeed. They may make greater sacrifices to enroll and, therefore, may place greater value on college study. In addition, nontraditional students may be more likely than traditional students to recognize the importance of college for sustained career growth, financial well-being, and personal development. Finally, some nontraditional students may simply need to refresh previously learned skills. If these generalizations are true, policy makers may want to establish somewhat different remedial policies for traditional and nontraditional students.

Conclusions

This report provides documentation that many students are academically under-prepared when they arrive at Kentucky's colleges and universities. As a state with a history of low educational attainment, Kentucky must continue to make opportunities for success in postsecondary education available to its citizens. The Commonwealth has a responsibility to provide educational opportunities that are the cornerstones of the fulfillment of individual potential and of economic development. Council members, however, are faced with a number of important policy issues stemming from the great

demand for remedial instruction. During the coming years, the CPE must grapple with the following policy issues:

- How prepared are students to undertake college-level course work?
- What is the proper point of entry for under-prepared students? (community college? technical institution? university? all institutions?)
- Does the Pre-College Curriculum adequately prepare students for college?
- How consistent are institutional remedial policies across the state?
- How can remedial policies support equal opportunities?
- Who should help fund remedial education? (the state? the student? the student's high school?)
- How effective are remedial programs?
- Should different remedial policies be established for students who are under-prepared in only one subject and for students who show a general lack of preparation for college-level work? For students coming directly from high school and for those adults returning to college?

This analysis provides Council members with a starting point for answering these difficult policy questions. Some of the questions can be addressed adequately with the information at hand; other questions may require additional data before workable initiatives can be developed. A thoughtful approach to the problem of under-prepared students recognizes that remedial initiatives must dovetail with policies in many other areas of postsecondary education, including admissions standards, quality and effectiveness, accountability, and alliances with the primary and secondary education community.

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